

## **NPOESS Field Terminal Segment**

The Field Terminal Segment (FTS) is a Software only product. Field terminal hardware will be purchased, owned, operated, and maintained by Department Of Commerce, Air Force, Army, Navy, Marine, national and worldwide civil organizations. The FTS will allow users to receive and process the NPOESS continuous broadcast of sensed data via two frequencies with field terminals located on the surface. The High Rate Data (HRD) will be transmitted at X-band (7812 MHz or 7830 MHz) with a data rate of 20 Mbps. The Low Rate Data (LRD) will be transmitted at L-band (1706 MHz) with a data rate of 3.88 Mbps. All data are packetized using Consultative Committee for Space Data Systems (CCSDS) protocols. Once the field terminal user receives the data, it is pre-processed to depacketize data. The raw data are sent into the NPOESS Field Terminal Software that processes the data into Raw Data Records (RDRs), Sensor Data Records (SDRs, Temperature Data Records (TDRs), and finally Environmental Data Records (EDRs). The EDR is the NPOESS product that can be passed to post-processing software inside the field terminal for value added processing. The point where the EDR passes to a post-processing application is the NPOESS/User interface.

### **HRD EDR Performance**

99% of EDR performance attributes meet or exceed operational requirement thresholds. Analysis shows latency requirements achievable with current COTS desktop workstations using symmetrical multiple processors. The FTS software adapts to missing channel data or missing ancillary data and uses graceful degradation rules. Lossless RICE compression is used by the VIIRS sensor prior to downlink from the satellite.

### **LRD EDR Performance**

Meets key users' needs: 0.8 km resolution imagery and programmable downlink. Software produces the 8 high priority EDRs at or near LRD objective levels. Software produces all 15 lower priority and 5 supporting EDR products. Software designed to automatically recognize missing channels and ancillary data. Lossless and lossy JPEG2000 compression used on selected APIDs for downlink from the satellite.

### **Outreach**

To assist the user community in developing field terminal hardware for the NPOESS era, the Integrated Program Office (IPO), in a Memorandum of Agreement with the users, agreed to develop demonstration terminals for both the HRD and LRD links. The system requirements necessary to run software on these terminals will be provided to field terminal equipment users and vendors.